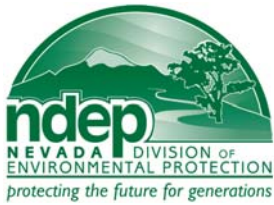


Lesson 9

Breakin' It Down!

Waste Characterization
Intro to Compost

Support Document	Teaching Strategies	M2-5
Lesson 9 part 1	Lecture	M2-7
Lesson 9 part 2	Lecture	M2-10
Support Document	Vocabulary	M2-13
Support Document	Waste	
	Characterization	M2-14
Support Document	Compost Ingredients	M2-16
Support Document	Compost Formula	M2-17
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Solid Waste & Recycling Curriculum

Lesson 9

Teaching Strategies

Breakin' It Down!

Waste Characterization Intro to Compost

Teaching Strategies

Lecture

This strategy is effective for all levels of learners.

During the lecture, an alternative may be to use the overhead (use student worksheet as a transparency)

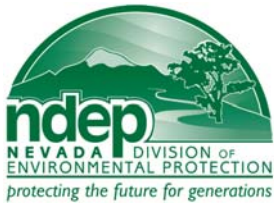
Worksheets

Worksheets are provided to guide the students through the lesson.

The lead teacher may prefer the students to take their own notes.

For below level learners and special ed, the teacher may consider having the worksheets filled out for these students. This would be done before class by the teacher or by having an advanced student help.

Tip: The student worksheet can be made as a transparency for group discussion.



Solid Waste & Recycling Curriculum

Lesson 9

Lesson Time:
20 minutes
Mini-lesson

Vocabulary:

Municipal Solid Waste (revisit from lesson 2)

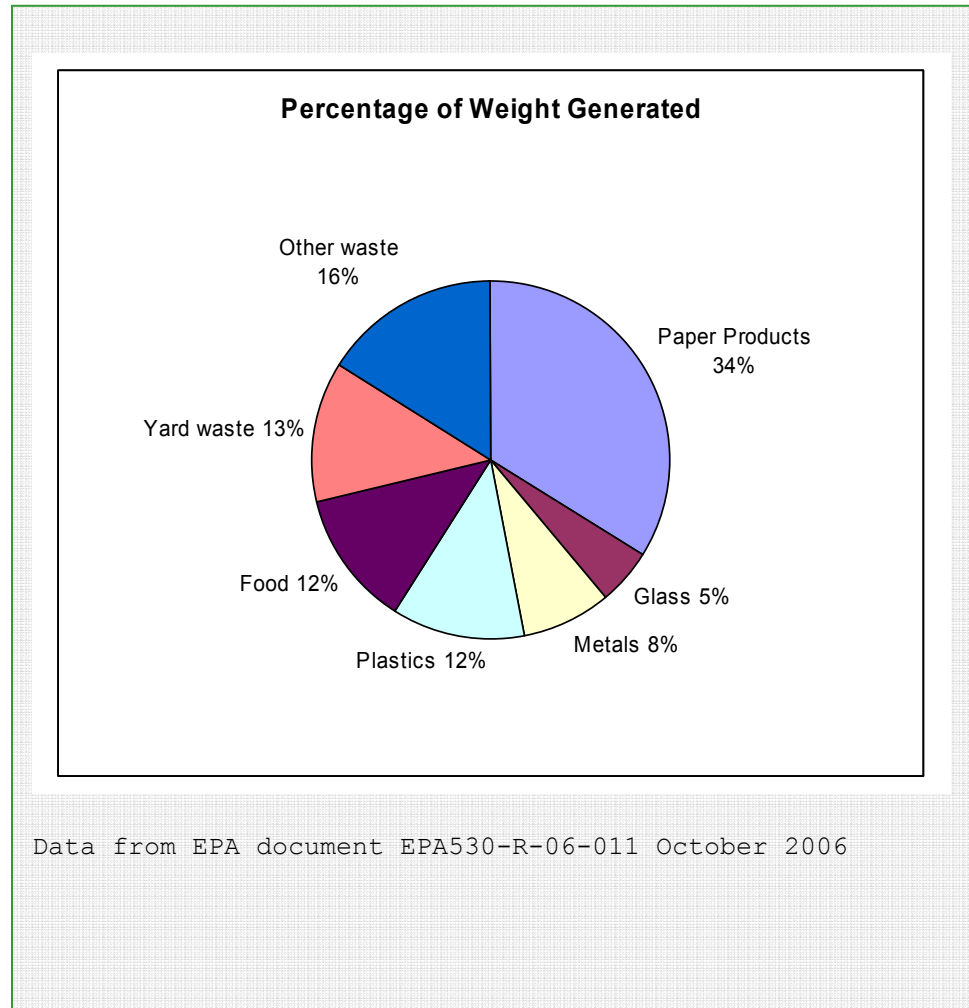
Waste Characterization Study

Environmental Protection Agency

Organic Compounds

Breakin' It Down!

Waste Characterization



Objective

Students will understand that studies have been conducted to determine what makes up municipal solid waste.

Students will be able to identify of the categories of MSW generated can be recycled.

Materials Needed

30	Single subject notebooks
6	Dry erase markers
1	White board

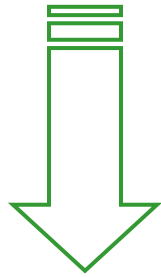
Anticipatory Set

Write the lesson objectives on the white board.
Discuss with the students what the objectives of the lessons are.

Objective: You will understand that studies have been conducted to determine what makes up municipal solid waste.

Objective: You will be able to identify which of the categories of MSW generated can be recycled.

Distribute handouts (or workbooks).



Introduction:

“Let’s take a quick look at the types of things people throw away and in what amounts.”

Modeling / Guided Practice

1. Have the students take out their notebooks.
2. Ask the students if they know what a characterization study is. Explain.
3. Write the chart (included—mention the info is from the EPA) on the board.
4. As you write the information on the board, have the students copy the information into their notebooks.
5. Explain that you can also write the info from the chart in a pie graph.
6. Draw pie graph on board.

Modeling / Guided Practice

7. As you write the information on the board, have the students copy the information.
8. Be dynamic as you write important bits of information on the board, interact and discuss.
9. Point out the materials that will be discussed in the rest of the program. Identify recyclable materials.
10. Focus now on combining the Yard Waste and Food Scraps. They are all organic compounds.
11. Generally, organic compounds can be composted.

Closure:

1. Transition into composting.

Independent Practice

1. Not applicable for this lesson. This flows into part 2 of lesson.

Lesson Time:
35 minutes
Mini-lesson

Vocabulary:

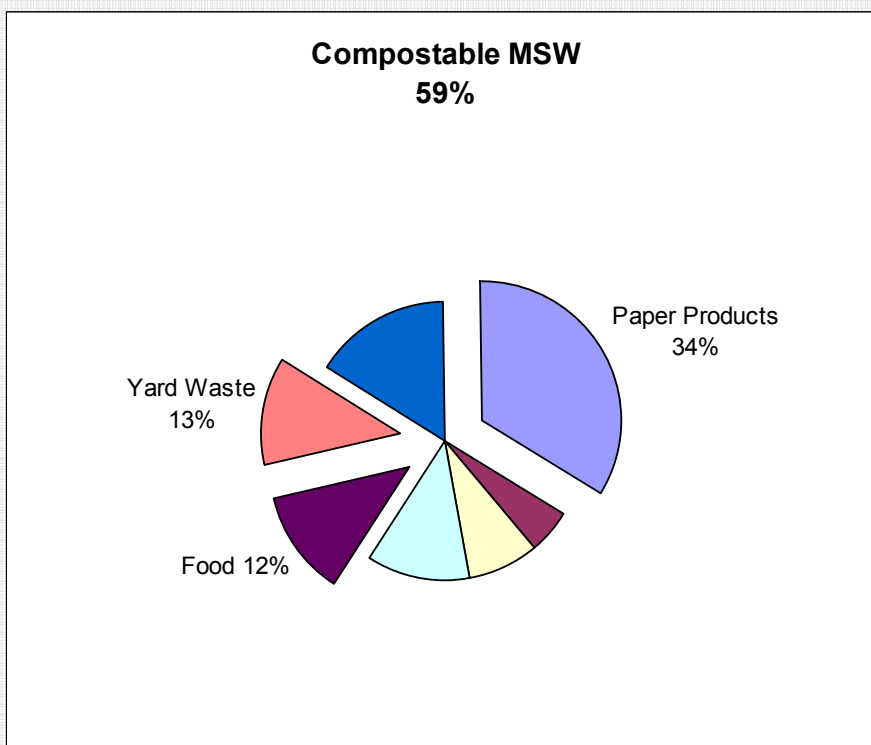
Compost

Decompose
(revisit from
lesson 4)

Biodegrade
(revisit from
lesson 4)

Breakin' It Down!

Intro to Compost



Objective

Students will be able to identify what types of materials can be composted and what cannot. Students will recognize that for efficient composting, there must be a balance of materials.

Materials Needed

30	Single subject notebooks
6	Dry erase markers
1	White board

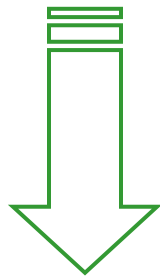
Anticipatory Set

Write the lesson objectives on the white board.
Discuss with the students what the objectives of the lessons are.

Objective: You will be able to identify what types of materials can be composted and what cannot.

Objective: You will recognize that for efficient composting, there must be a balance of materials.

Distribute handouts (or workbooks).



Introduction:

Transition from part 1 of lesson. The previous mini-lesson ended with organic materials in the waste stream.

Modeling / Guided Practice

1. Have the students take out their science notebooks.
2. Ask students to define compost. If they do not come up with the definition, write it on the board. Have the students copy it into their notebooks.
3. Ask the students to tell you the kinds of items that go into a compost pile.
Write some answers on the board. Have the students copy the answers into their notebooks.
4. Ask the students to tell you the kinds of items that should not go into a compost pile. Write some answers on the board. Have the students copy them into their notebooks.

Modeling / Guided Practice

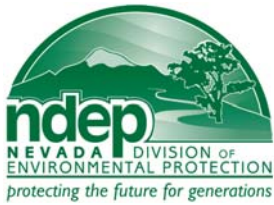
5. Why can't these items go into the compost pile? Write some answers on the board. Have the students copy them into their notebooks.
6. Explain that all organic matter decomposes.
7. Explain the need for balance to get the best decomposition rate.
8. Write down the formula that you will use for the compost column that will be constructed during next class. Have the students copy it into their notebooks.

Closure:

1. Take a few minutes to do a quick review of composting.
2. Check for understanding.
3. Let the students know that in the next class period the balancing of "browns" and "greens" will be discussed.

Independent Practice

1. Not applicable.



Solid Waste & Recycling Curriculum

Lesson 9

*Support
Document*

Vocabulary

Breakin' It Down!

Waste Characterization Intro to Compost

Vocabulary

Municipal Solid Waste: Trash (or garbage) generated by people and industry

Waste Characterization Study: A study performed in order to find out how much and what types of waste are thrown away.

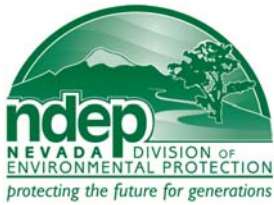
Environmental Protection Agency: A federal agency dedicated to helping the environment. They set rules and regulations for how waste can and should be disposed.

Organic Compounds: Includes items that are living, have once lived, or are made from living things.

Decompose: The process that an item goes through to break down into its smallest elements.

Biodegrade: The process that an item goes through to break down into its smallest elements, through the use of micro-organisms.

Compost: The result of decomposition of organic material. It is generally used for fertilizer or soil conditioning.



Solid Waste & Recycling Curriculum

Lesson 9

Support Document

Breakin' It Down!

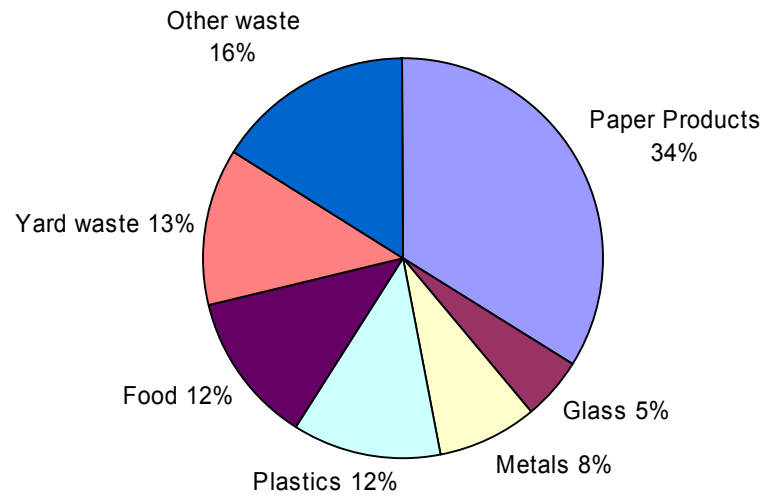
Waste Characterization Intro to Compost

Support Document

Material	Weight generated (millions of tons PER YEAR)	Percent of Total Waste
Paper products	84	34%
Glass	12.8	5%
Metals	18.7	8%
Plastics	28.9	12%
Food	29.2	12%
Yard waste	32.1	13%
Other	39.96	16%
Total	245.7	

Data from EPA document EPA530-R-06-011 October 2006

Percentage of Weight Generated



Support Document

Breakin' It Down!

Waste Characterization Intro to Compost

Compost Pile

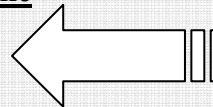
Items that can go in a compost pile

Grass clippings and leaves.
Newspapers.
Kitchen waste
Fruits and vegetables
Woody material

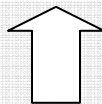
Items that can NOT go in a compost pile

Meats
Dairy products
Vegetables cooked with animal fats
Animal fat

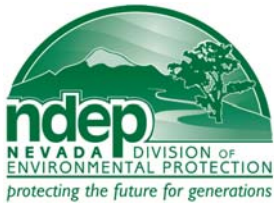
Human and pet fecal matter



These
items
will
attract
vectors!



Will make humans and pets
sick!



Support Document

Breakin' It Down!

Waste Characterization Intro to Compost

Compost Column Formula

Formula to use in compost column

2 1/2 cups bagged salad (greens)
1/2 cup dried leaves (browns)
1/2 cup pencil shavings (browns)
1 cup shredded paper (browns)
1 cup water
1 cup soil

1 tablespoon compost starter (microorganisms)

Objectives: I will understand that studies have been conducted to determine what makes up municipal solid waste.
I will be able to identify which of the categories of MSW generated can be recycled.
I will be able to identify what types of materials can be composted and what cannot.
I will recognize that for efficient composting, there must be a balance of materials.

Vocabulary:

Municipal Solid Waste:

Waste Characterization Study:

Environmental Protection Agency:

Organic Compounds:

Decompose:

Biodegrade:

Compost:

Solid Waste and Recycling Curriculum

Lesson 9

Name: _____

Breakin' It Down!

Date: _____

Waste Characterization:

Chart:

Material	Weight Generated (millions of tons PER YEAR)	Percent of Total Waste
TOTAL		100

Please draw a pie chart representing the information in the Waste Characterization table.

Pie Chart:

Which of the categories above can be composted?

List some items that can be composted.

List some items that cannot be composted.

Solid Waste and Recycling Curriculum

Lesson 9

Name: _____

Breakin' It Down!

Date: _____

Write the formula for next session's compost column.

Solid Waste and Recycling Curriculum

Lesson 9

Name:_____

Breakin' It Down!

Date:_____